

Lead Story

1824

Morphology and Mind

By John Ringman

Last week at McGill, Nobel Laureate Gerald Edelman gave a set of three lectures on *Morphology and Mind*. Each of them dealt with a different area of brain science, covering terrain well-trodden by biologists, computer scientists, psychologists, and philosophers. Without dwelling on any particular subject for long, Edelman attempted to synthesize very diverse aspects of brain science.

Topobiology: The Problem of Morphology was the subject of Edelman's first lecture. Morphology refers to the form a growing embryo assumes. Topobiology, a term coined by Edelman, is the study of how cells interact to control this development. Though much is understood about genes and how they affect cell function, there is still much to learn about how a single

cell, the zygote, divides to create the millions of differentiated cells that constitute a living organism.

Dr. Edelman spoke about his research on the molecules that mediate the interaction between cells. They can trigger a cell to divide or become a specific cell type (say, that of a liver) from a previously undifferentiated all-purpose cell. Molecules such as N-CAM (neural cell adhesion molecule) seem to direct the growth of cells in many parts of the embryonic brain. Edelman describes these largely genetically controlled developmental phenomena as setting up the brain's "primary repertoire" — the unexperienced brain (loosely analogous to the "tabula rasa" or blank tablet of cognitive psychology) — that we are born with.

continued on page 5

Toolbox

L R 1 2 3 4 5

Science Edition

Front Page Graphic

14,161K in disk 5,011K available

A

Flag - Feb. 16, No. 70

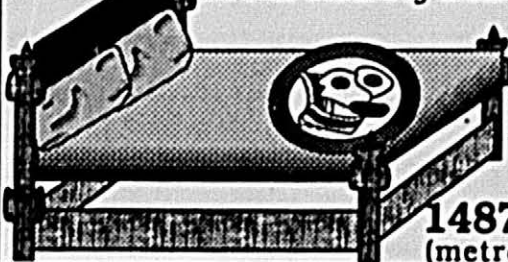
The McGill Daily
science edition



Y-Country Camp.
Resident Summer Camp Located in Laurentian Mountains
Staff Positions Available
For Summer 1990

Senior Counsellors Head of Arts & Crafts
Kitchen Helpers Head of Photography
Walters Head of Science & Nature
Office Staff Head of Junior Waterfront
For More Info please call:
Harvey Finkelberg, Director 737-8551
Y Country Camp
YM-YWHA

Suzanne Rodrigue Enr.
BED and BREAKFAST
In The Heart of Downtown Montreal



**GOOD
RATES**

393-8070

1487 Argyle Ave.
(metro lucien l'allier)

Come join the
Daily after the
wee break.
News and
feature writers
meeting,
Mondays, 16h.



- Imported & Domestic Beers on Draft
- Giant Screens
- Largest Satellite Dish in Montreal
- Ribs, Chicken & Wings

Students needed to
drink our Beer

Best Happy Hour In Town.
Prices so low that
they're ridiculous
to put in print
5 - 7 pm • Monday to Friday

**Where
Leaf fans
congregate**



Students needed to
drink our Beer

BAR/RESTAURANT
CHAMPS

3956 ST. LAURENT 987-6444
(just below Duluth)

interview hair salon
BEST OFFER OF THE 90's

2 for the Price of 1
Come and Bring a Friend



CUT \$25
(2 for 1)

PERM \$50
(2 for 1)

HIGHLIGHTS \$50
(2 for 1)

Interview Hair Salon 849-9419
2124 Drummond corner of Sherbrooke



Specializing in Black and
Third World Books
Celebrate Black History Month

Selected Titles:

- Being Brown - A Very Public Life -*
Rosemary Brown
- Catch a Fire - The Life of Bob*
Marley - Timothy White
- The Struggle Is My Life - Nelson*
Mandella

**1990 New Internationalist
Calendar 40%**

1205 De Maisonneuve W.
(between Drummond & Stanley)
287-9739

Bridgehead Tea and Coffee Available



STUDENTS' SOCIETY ELECTIONS
March 6, 7, 8, 1990
REFERENDA QUESTIONS

ACCES MCGILL

Whereas the situation of underfunding at McGill University does not permit an adequate amount of money to be used for services and equipment for students with disabilities; and

Whereas there are more disabled students at McGill University today than ever before, and these students and other persons with disabilities considering studying at McGill University have the same right to pursue the excellent academic programs that this institution has to offer, as their non-disabled counterparts:

Do you agree that the levy initiated in a March 1988 referendum be extended for two years commencing September 1, 1990, the revenue of which shall be used to provide the required services and equipment as allocated by the Joint Senate/Board of Governors Committee on Disability?

YES _____ **NO** _____

ATHLETICS COMPLEX

Students presently pay an exceptional fee of \$7.50 per semester to partially finance a new athletics complex. The fee has been collected since 1982 and was reaffirmed in a campus-wide referendum question in March 1987. The University Board of Governors has resolved to build such a complex, but construction has not yet begun, due to a lengthy municipal approval process.

Do You:

1. Agree that if the construction of new athletics facilities has not begun prior to June 1, 1991, then all monies collected up to that date be put toward the renovation of existing facilities and the assessment shall then cease?

OR

2. Agree that all monies collected up to now should be put toward renovation of existing facilities and the assessment shall cease?

1 _____ 2 _____ **NEITHER** _____

*There will also be elections for Senate, SSMU Executive, Board of Governors, Daily Publications Society and QPIRG.
25 Poll Clerks required from 9 - 1 p.m. each day. Apply at SSMU desk.*

Anne Yu
DCRO

Eric Steinman
CRO

Limiting the genealogy of particles

Scientists working in the field of high energy physics, the branch of science that catalogues the basic components of our universe and makes sense of their complex and counter-intuitive interactions, believe they have discovered a limit to the number of fundamental particles.

by Scott Hagan

Results hailing from the Stanford Linear Collider (SLC) in California and the Large Electron-Positron (LEP) ring at Cern near Geneva, Switzerland suggest that there are only three 'generations' of elementary particles.

Each generation consists of a quartet: two quarks and two leptons. For instance, the first generation unites the 'up' and 'down' quarks, most familiar to us as the components of the proton and neutron, with the electron and the neutrino. Of the 12 particles in the three known generations, all but the 'top' quark (or 'truth' as aesthetes prefer) have been experimentally detected.

Curiously, virtually all ordinary matter is accounted for by the first family alone (For those of you saw the movie Roxanne Darryl Hannah goofed on this point). Scientists are baffled as to why nature might choose to replicate itself in such a redundant fashion.

In the beginning

The mystery began in 1938 when the 'muon' was discovered. The muon acts just like the electron except that it is substantially heavier. The fact that it seemed to perform no unique function in the scheme of things led to considerable confusion. In the following decades, the situation was only compounded by the discovery of the remaining second generation particles, the 'strange' and 'charm' quarks and the muon neutrino. Subsequently a third generation turned up. This meant that until recently there was no compelling reason to believe that there should be a limit to the number of generations. But the findings at LEP and SLC have dramatically altered this perspective.

To determine a limit on the number of possible families, scientists at both facilities have focused their attention on the Z particle. This giant in the world of elemen-

tary particles is difficult to produce, even in the most powerful accelerators. For this reason, its discovery in 1983 came years after theorists first conjectured its existence as one of the authors of the 'weak' force. To understand what this means, it is important to understand light.

Light

Particles of matter exchange packets of light called 'photons' as if they were telegrams telling one another how to interact — codes of conduct as it were. This line of thought led to the most successful physical theory to date, quantum electrodynamics (QED), and led scientists to conjecture that particles might communicate the other basic forces of nature. Light is, of course, massless. But imagine if light was heavy — as heavy as the Z particle. If eyes could still exist in such a world, they would be able to see only to a horizon of 10^{13} centimetres. 'Heavy light' from further away would be too lazy to make the trip. This is how the Z operates, shuttling only between particles very close together, telling them to interact in a certain defined way.

On the other hand, photons have an unlimited range. Scientists coined the name of the force 'carried' by the Z based on its inability to extend beyond a tiny sphere of influence. Surprisingly, events on the minuscule scale of the weak force play an important role in the functioning of our sun and other stars.

For our purposes it is important only that the Z is, by elementary particle standards, massive and remarkably short-lived. After only about 10^{-24} seconds, it decays into a particle and an antiparticle. In an accelerator, the Z particle can be detected because the signatures produced by the decay products of the particle are written in monolithic detectors straddling the accelerator at a target point. The de-

tor allows detailed information to be extracted from the sub-atomic world. In this case, decay product information presents itself as the ideal test of the number of generations.

Measurements made at the Mark II detector at SLC and four similar detectors at LEP (specifically ALEPH, DELPHI L3 and OPAL) indicate that the Z decays only into particles of the three generations already known. Each result, taken separately, leaves little room for error and the corroboration of the five makes for a formidable finding indeed. There still remains the eventuality that none of the members of a fourth generation have masses less than half that of the Z. This would make it impossible to produce these particles as by-products of the Z alone. Scientists in the field, however, find this an unlikely scenario. The known neutrinos are all massless or at least very light; a fourth generation neutrino would not be expected to radically depart from this tradition.

Some cosmologists had hoped that a fourth neutrino might solve the 'missing mass' problem. Detectable matter makes up only one tenth of the mass known to be present in the cosmos. While another neutrino might have simultaneously accounted for the bulk of the mass of the universe and escaped detection by probing physicists, the new result from LEP and SLC will force scientists to search elsewhere for candidate solutions.

The accelerators

Plagued with difficulties from the outset, the Californian collaboration saw their first Z in the spring of last year, already well behind schedule. Originally the SLC facility had been constructed for much lower energies than were necessary to produce a profusion of Z's. The task of modifying a 20-year-old design proved to be fraught with difficulties never encountered by accelerator physicists.

Beams of electrons and their anti-particles, positrons, had to be made to collide within a target only a few micrometers across, a formidable feat to perform with particles that are invisible to even the best

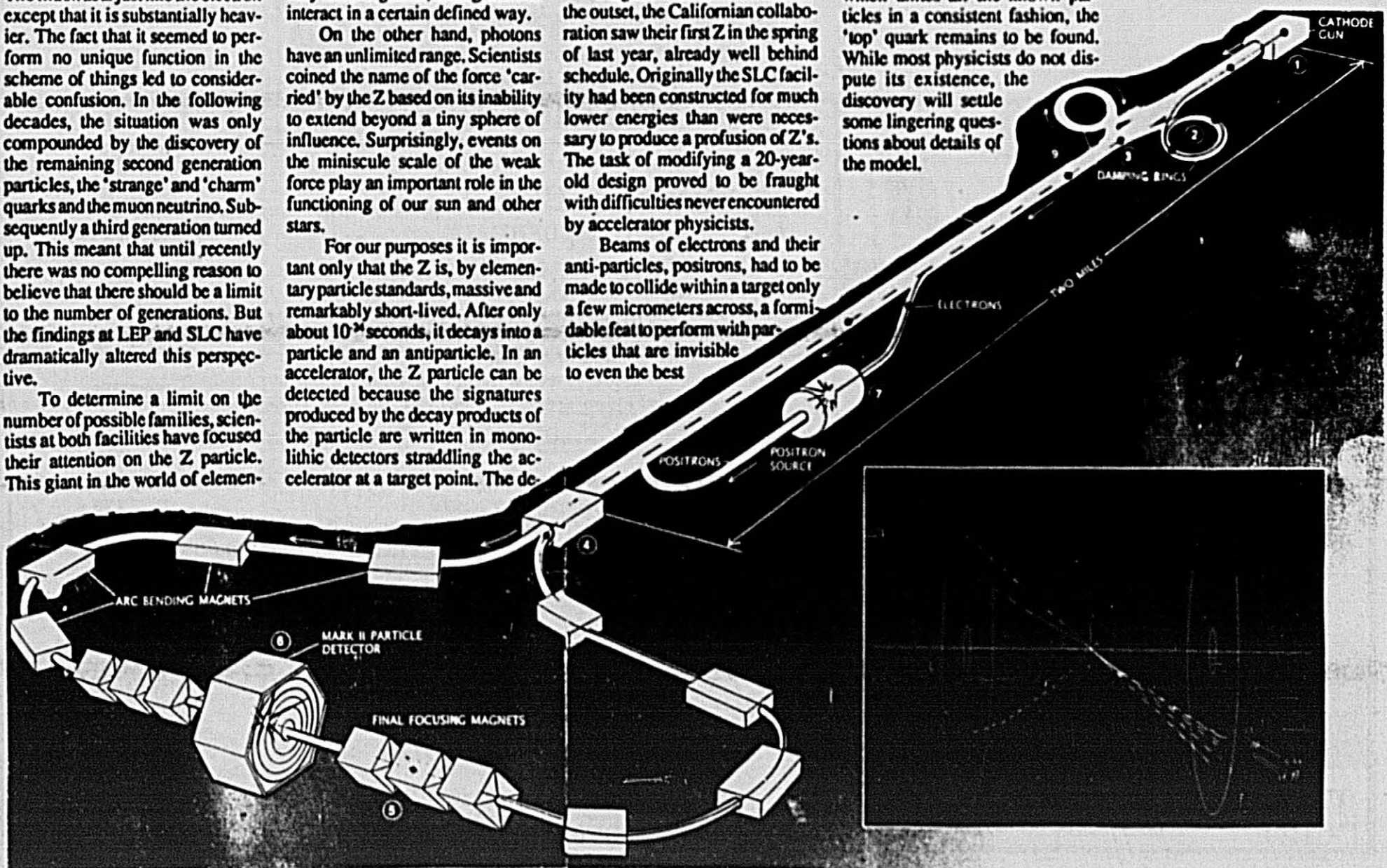
microscopes. To make matters worse, the entire structure sits astride the San Andreas fault. While North American sports fans were waiting for the World Series to resume after the San Francisco earthquake, scientists at SLC had their hands full with a raft of new problems. By comparison, LEP had been making Z's for six years, since a team of scientists there first discovered it. Despite everything, SLC published the first result. But the people at LEP were fast on their heels; a matter of mere days made the difference. Statistically speaking, the European-based teams made a stronger statement, and better bounds on the error continue to come out, with the Fermilab National Accelerator Laboratory (FNAL) near Chicago recently joining the fray.

By no means does all this suggest that our understanding of nature's basic building blocks is complete. While we need no longer look beyond the third generation, nothing presently forbids the extension of each generation to include more than four particles each, or the discovery of new forms of matter that don't fit into the family picture.

High energy physics is beset with a plethora of theories proposing a wide variety of yet unfamiliar and exotic forms that matter might take — like squarks, sleptons and technicolour particles — that could be beyond the scope of present accelerators to detect. Even within the currently accepted framework known as the Standard Model, which unites all the known particles in a consistent fashion, the 'top' quark remains to be found. While most physicists do not dispute its existence, the discovery will settle some lingering questions about details of the model.

More urgent is the quest for the elusive 'Higgs boson' without which the entire structure might collapse. Originally it was hypothesized in order to explain how particles in the early universe gained mass. It is now incorporated into the fundamental precepts of the Model so that everything is in doubt while it evades detection — so much so that Higgs himself has renounced his own theory. All these possibilities await more powerful accelerators than the ones now in operation to confirm or contradict them.

Modifications to the Cern laboratory are currently underway, 'upping the ante' for the coming round of particle investigations. Higher energies and greater numbers of particles will broaden the vistas accessible to the high energy physicist and entrench Cern as a world leader in the field for much of the 1990s. Work on a brand-new facility in Texas, the controversial Superconducting Super Collider (SSC) on which the American government will lavish billions of dollars over the next several years, has only just begun. Slated for completion near the turn of the century, it is expected to outstrip all competitors. But first some major technological hurdles will have to be overcome. The explosion of data produced by the accelerator will be beyond the capacity of modern computers to handle. It is hoped that considerable advances will be made in both hardware and the software used to analyze the complicated 'events', before the SSC comes 'on-line'.



EVENTS

Friday, February 16th

Black History Month: presents the McGill Black Student Network Cultural Exchange with Howard University, Wash-

ington, D.C.. Today until Sunday, February 25.

Centre for Developing Area Studies-Seminar Series: "The Muslim Education Movement" with Lois Helms. 3715 Peel St., Rm. 100. 12:30-1:30 p.m..

McGill Film Society: Gay and Lesbian

Film Night. Canadian and American independent and experimental films. Leacock 132, 7:30 p.m.. Co-sponsored by Gays and Lesbians of McGill.

McGill Middle East Studies: presents Arab-Zionist Negotiations under the British Mandate: Some Lessons from the past?

with Prof. Neil Caplan.

Yellow Door Coffee House: presents "Live Music" with Roger Blaise and The Ballad Mengers. "Open Stage" to follow. 3625 Aylmer (north of Prince Arthur), 8:00 p.m.. Admission: \$2.00. Coffee, tea, herbal teas, etc.: \$5.00. Info.: 398-6244.

ANC Solidarity Committee of Montréal: presents a dance in celebration of the release of Nelson Mandela. 6505 St. Hubert. \$16.

Undergraduate Services McGill University Libraries: presents a Social Sciences Term Paper and English Literature Workshops. 1:10pm. McLennan Lobby.

African Students' Association of Concordia: presents a night of African Culture. 8:30 pm. \$3

Saturday February 17th

Amnesty International Youth Conference: Third Annual Conference at Marionopolis College, 3880 Côte des Neiges. Workshops and guest speakers on human rights issues. Registration at 9:30 a.m.: \$2 (including lunch). Info.: 284-4257.

Amnesty International Benefit Concert: T.J. Plenty (of the Asexuals), Fall Down Go Boom, The Griffins, and Me, Mom, and Morgentaler will be rocking Four-ones Electric (97 Ste. Catherine E.) in support of human rights. Doors at 7:30 p.m.; Show at 8:30 p.m.. Tickets \$6 at the door.

Advance Notices:

East European "Freedom and Peace Movement". With Jacek Czaputowicz, Freedom and Peace, Poland; Malgorzata Tarosiewicz, Freedom and Peace, Poland; Jana Petrova, Czech, Independent Peace Association; designers of Citizen Assembly-Parallel Helsinki Accord. Unitarian Church, Sherbrooke and Simpson, Wednesday, February 21st, 8:00 p.m.. Sponsored by West Islanders for Nuclear Disarmament, Project Ploughshares, Westmount Initiatives for Peace, and Voice of Women. Info.: 695-2675, 935-1571.

All contents ©1990 by the Daily Publications Society. All rights reserved. Opinions expressed in the pages of the newspaper do not necessarily reflect the views of McGill University. Products or companies advertising in this newspaper are not necessarily endorsed by the Daily staff. Printed by David Martin Development Inc., Montréal, Québec.

The Daily is a founding member of Canadian University Press, Presse étudiante du Québec, Publi-Peq and CampusPlus.

Editorial Offices
3480 McTavish, room B-03
Montréal, Québec H3A 1X9
telephone (514) 398-6784

contributors
Joe Heath
Scott Hagan
John Ringman
Mark Hopson
Mark Lurie
Stephane St-Onge
Chris Clark
co-ordinating editor
Susana Bejar

photo editor
Dennis Sagwitz
Gilles Pesant

features editor
Alex Roehn

co-ordinating news editor
Linda Gyulai

news editor
Joyce Lombardi
Carl P. Wilson III

daily française
Philippe Archambault
Alan Bowman

science editor
Alice Wei

layout and design co-ordinators
Heather MacKay
Eric Leonard

supplement editor
Jennifer Cressy

Business and
Advertising Office
3480 McTavish, room B-17
Montréal, Québec H3A 1X9

business managers
Brightie Elle
Marian Schrier
telephone (514) 398-6790

advertising managers
Caroline Elle
Boris Shadov
telephone (514) 398-6791

advertising layout and design
Mike Sportza

Frosty, Sally ©1988, 1989, 1990 Michael Sportza

On
Professionalism
A
Series
From
Black &
McDonald

"Take time
to think,
it's the
source of power."

-Unknown

Black & McDonald Limited

Canada's largest independent electrical & mechanical contracting organization

St. John's • Goose Bay • Halifax • Montreal • Ottawa • Toronto • Hamilton
London • Kitchener • Winnipeg • Edmonton • Calgary • Vancouver

ACADEMY AWARD NOMINEE BEST FOREIGN FILM

"MAGIC, ROMANCE AND FUN!
MOVIE LOVERS WILL LOSE THEIR HEARTS TO
'CINEMA PARADISO'" - Peter Travers, ROLLING STONE

**Cinema
PARADISO**

G

PHILIPPE
NOIRET

SALVATORE
CASCIO



3:00, 7:00 daily

\$5 Admission \$3 With Student ID

"HILARIOUS COMEDY FOR MONTY
PYTHON FANS" - Myron Galloway, THE SUBURBAN

Tim Robbins
Terry Jones
John Cleese
Eartha Kitt
Mickey Rooney
5:15, 9:30 daily

14



erik the Viking

PRODUCED BY THE VIKING FILM PRODUCTIONS
ALL RIGHTS RESERVED

An ORION PICTURES Release

PARIS 896 Ste-Catherine West
875-7284 corner McGill College



Arts & Science Undergraduate Students Deadline for Withdrawing

from "B" Term Courses (No
Refund) Is Today!

Friday, February 16, 1990

Come to:
Dawson Hall, Ground Floor

GRIP Québec PIRG

Call for persons interested in
standing for the 1990-91
Québec-PIRG Board of Directors
elections.

Nomination forms available at
QPIRG office 5th floor Pavillion
Eaton. **398-7432.**

Nominations by Feb. 28, 5:00 p.m.
Campaign Begins February 26.
Elections: March 6, 7, 8

CELEBRATE

SPRING BREAK '90

IN FT. LAUDERDALE AT

SUMMERS on the beach

FT. LAUDERDALE'S PREMIERE
CONCERT AND DANCE CLUB
18 YEARS AND OLDER ADMITTED

10 A.M. to 6 P.M. POOLSIDE PARTIES
LIVE D.J. EMCEEING POOLSIDE CONTEST • WATER VOLLEYBALL
TOURNAMENT • FREE T-SHIRT RELAYS • THE BELLYFLOP CONTEST
AND CLIMAX THE DAY WITH ... CASH PRIZES • FREE T-SHIRTS
AND OTHER GIVEAWAYS
SUMMER GAMES VIDEO NOW ON SALE AS SEEN ON CABLE T.V.

7 P.M. to 8 P.M.

COLLEGE HAPPY HOUR

MCGILL UNIVERSITY PARTY • MONDAY, FEB 19

FREE SPRING BREAK '90 T-SHIRT WITH PAID ADMISSION FOR ABOVE
COLLEGE STUDENTS BETWEEN 7 AND 8 P.M. WITH PROPER COLLEGE I.D.

ALL BAR DRINKS AND DRAFT BEER 75¢
COMPETE IN CONTESTS FOR PRIZES!

EVENINGS

SUMMERS ON THE BEACH PRESENTS ... FURY
FT. LAUDERDALE'S FINEST ROCK 'N ROLL BAND
NIGHTLY PLAYING THE BEST DANCE MUSIC ...
PLUS 6 BARS TO SERVE YOU!

CLIP & SAVE

MCGILL UNIVERSITY PARTY • MONDAY, FEB 19

ONE FREE BAR DRINK OR DRAFT OR SOFT DRINK
GOOD FROM 7-8 P.M. NIGHTLY

LIMIT ONE PER CUSTOMER

Summers on the Beach • 219 S. Atlantic Blvd. • Ft. Lauderdale, FL • (305) 462-8978
(LOCATED 1/2 BLOCK NORTH OF LAS OLAS BLVD ON A1A)
ADMISSION POLICY: 18 YEARS OR OLDER WELCOME

SPRING BREAK '90

Bacterial excretions and biodegradable plastics

by Chris Clark

The term "biodegradable plastic" has always been something of a misnomer. Until now the plastic itself has not been changed, it has simply been mixed with a small amount of starch during the production process. The starch decomposes, leaving behind a weakened "net" of non-degradable plastic. But a British company, Imperial Chemical Industries, has now developed a process for refining true biodegradable plastics.

The new plastic, poly beta-hydroxybutyrate (PHB), is produced through bacterial fermentation. The bacteria store energy in the form of small granules of PHB plastic. The granules can be extracted by passing the bacteria through a centrifuge and filter. Because the plastic is originally made as stored food, it can easily be broken down by other bacteria.

Dr. Robert Marchessault of McGill's Pulp and Paper Research Institute is currently researching the properties of this new plastic. He said that under the right conditions any bacteria will store food as a plastic. But Imperial has found the optimal conditions for producing the plastic. Their major technological innovation involves a process for extracting the granules in sufficiently large quantities and

pure concentrations — recovering as much as 80 per cent of the total mass of the bacteria as PHB.

The first types of biodegradable plastic developed raised considerable concern among environmentalists. Garbage bags, for instance, were produced with about 94 per cent plastic and six per cent corn starch. When the starch broke down, the result was a bag full of "pinholes," according to Dr. David Wiles of the National Research Council of Canada. The plastic which remained eventually fell apart, leaving a fine residue of plastic particles — a potentially harmful pollutant.

PHB differs from other plastics in that it is a polyester rather than a polyethylene. The presence of more hydrogen and oxygen atoms in polyester means that bacteria are able to break the molecular bonds. In normal plastics, bacteria cannot break off the carbon atoms. Some plastic products, such as milk bags, depend on this property and could not be made out of biodegradable plastic.

But despite the importance of the PHB innovation, disposal problems are far from resolved. Solid waste, even paper, will not biodegrade in the wrong environment. According to Wiles, "In a sanitary landfill nothing biodegrades, whether or not it's biodegradable the conditions are not right. It's too dry, too cold."

Marchessault said landfills must be controlled to ensure the right conditions. "Just as every major city has a sewage disposal system, in the future landfills will have to be managed in order to keep conditions favourable" for the decomposition of solid waste.

Plastics presently make up seven per cent of all municipal waste. This is expected to rise to 10 per cent over the next decade. Restrictions on the use of plastics in packaging are forcing companies to look for alternatives.

Industry response

But PHB does not solve all the problems posed by our use of plastics. Most of the industry favors recycling over biodegradable plastics. Not only could recycling be implemented with less drastic changes to their production methods, it could even be made profitable.

The high cost of producing PHB makes it doubtful that it could ever completely replace cheaper non-biodegradable plastics. But it can be mixed with other non-biodegradable plastics just as starch is. The resulting products are considerably more durable, and retain the usual plastic properties.

But biodegradable plastics

pose a problem for recycling. They get mixed in with other plastics and lead to an inferior grade of recycled product. According to Marchessault, any solution will have to involve a mixture of recyclable and biodegradable plastics. "There are some products that are too difficult to recycle. The use of biodegradable plastics lies in these areas." But he said PHB plastics will find widespread application in fields like medicine or agriculture where bi-

ocompatibility of the plastic is required.

New research offers promising possibilities. One group of researchers is trying to isolate the enzyme that produces PHB. This enzyme could be used to grow plastic by injecting it into potatoes. It may also be possible to synthetically produce the plastic. Either of these alternative methods of production would significantly reduce the cost of the plastic.



...morphology and mind

continued from page 1

This led directly into the second lecture **Neural Darwinism: The Problem of Perception**. Edelman discussed how a perceiving and reasoning entity might arise from such a "primary repertoire." He drew an analogy with Darwin's theory of natural selection — cells of the developing brain have an over-abundance of connections. Due to activity caused by sensory experience some of these connections are reinforced. Others become "weak."

Edelman believes that our brains become programmed through this mechanism. It demonstrates the fundamental difference between minds and computers. While computers are machines that must be explicitly instructed to perform a task, brains have the capacity to *teach* themselves through experience to perform multitudes of tasks. As an example of a machine that can teach itself, Edelman showed a film of his "automaton." Although aesthetically pleasing and technical-looking, it did little to elucidate the theory.

In the final lecture Edelman took his ideas to metaphysical extremes in **The Remembered Present: Problems of Consciousness**. He proposed two general channels in the brain — one processes sensory input from the outside world, the other is responsible for referring this sensation to the inner state of the organism. Blocking the connection of these pathways leads to the dissociation of awareness and performance that occurs with cer-

tain brain injuries.

One example is prosopagnosia, where people with damage to certain brain areas cannot recognize faces visually but whose show through measures outside their awareness that recognition has occurred.

Edelman believes that it is the complex wiring of the brain that comes into being via his "neuronal group selection" mechanism that is responsible for the existence of mind. His explanation is mechanistic, but he holds that traditional computers cannot have consciousness — defined as the feeling of subjectivity humans have. He leaves the question of whether machines built like humans could have this consciousness to the philosophers, because his theory does not exclude the possibility.

Analysis

This is a necessarily brief and incomplete summary of the subjects Edelman covered. The fast-paced lectures were interspersed with personal anecdotes and analogies drawn from immunology, the field in which Edelman won the 1972 Nobel Prize.

Preferring "dark spots" he has moved into neuroscience now that he is "satisfied with his experimental work (in immunology) and 'the basic principles are understood.'" In his opinion neurosciences still have many dark spots, though he has "illuminated them very slightly."

Most of what Edelman said in his lectures is not new. He drew on the work of many researchers to support of 'his theory'. The way he spoke made it hard to tease out just

which ideas were his and which preceded his coming.

In fact he presented his own work in a general and ambiguous manner, such that few questions were elicited despite an audience full of people competent in the fields.

Many have complained that his book *Neural Darwinism: The Theory of Neuronal Group Selection* is similarly written and that the original contributions it contains are only extracted with difficulty. Francis Crick, a fellow Nobel laureate who reviewed the book, said Edelman is not specific enough about the definition of a "neuronal group," a theme central to his theory. He added that the analogy with

natural selection the name "Neural Darwinism" reflects is a loose one at best, and is therefore inappropriate. Crick suggested "Neural Edelmanism" as an alternative.

It seems pretentious of Edelman to speak so flippantly on such diverse topics as developmental neurobiology, neural network theory, and cognitive psychology. But one is forced to admit that he is well-read. In fact his greatest strength may be his ability to see through details (unlike the way science usually progresses) in order to see the big picture. Only time and further research will tell to what degree the great synthesizer has brought the Promethean Fire to illuminate us all.

Camp Massad

The Only Hebrew Speaking Camp in the Laurentians

6 Week Session.....\$2500

July 3 - Aug. 16

4 Week Session.....\$1850

July 3 - Aug. 1

Applications for employment are NOW being accepted.

For Further Information regarding enrollment and employment contact:



488-6610
Mark Weinberg, Director

Grand Salon Ralph Extra Special Women's & Men's Hair Stylists Special



Perm or Modelling including cut/blow dry rinse and styling, \$25



\$15 Shampoo, cut, wash, & blow dry for her SPECIALS WITH COUPON \$10 for him

680 Sherbrooke (corner University, next to McGill)

844-9688

West Island Jewish Community Center Day Camp SUMMER 1990

Staff Positions Available

Counsellors to work with Pre-School Children (early childhood experience an asset)
Water Front Staff Required (must have Nationals)

for more info please call
HARVEY FINKELBERG, 737-6551

Requests Proposals

Québec PIRG invites members of the McGill Community and beyond to submit proposals for action on various topics.

Québec PIRG can provide applicants with:

- Funds to cover expenses
- Assistance of qualified staff
- Contact with other interested citizens and a volunteer base
- Research Resources
- Computer Acces
- Development of Research for publication

Québec PIRG is working on issues concerning waste management and housing and is interested in proposals on these issues as well as the ENVIRONMENT, HEALTH, TRANSPORTATION, WOMEN'S ISSUES, HUMAN RIGHTS, STUDENT ISSUES AND MUCH MORE!!

WE NEED YOUR IDEAS!!

SUBMIT NOW!!

Applications are available in the Québec PIRG office, 5th Floor Eaton Building, and at Québec PIRG tables on campus.

For more information call: 398-7432

APPLICATION DEADLINE IS FEBRUARY 28, 1990

Copieville

COPYING AND PRINTING

2075 University 982-9499

(South of Sherbrooke -Mezz.)

2075 Mansfield 842-4401

OPEN EVENINGS & SATURDAYS

Fax Service Now Available



back to school special

SALON DE COIFFURE JOVEN

WOMEN WASH \$15 CUT BLOWDRY SPECIAL Elle et Lui

MEN WASH, CUT, BLOWDRY \$10

SPECIAL INCLUDES SHAMPOO, CUT, STYLING, ON PERMS orear RINSE, MOUSSE, STREAKS \$25

425 De Maisonneuve West, 844-7748



CAMP MAROMAC

CO-ED 6-16 LAURENTIAN MOUNTAINS

REQUIRES EXPERIENCED STAFF FOR THE FOLLOWING POSITIONS:

WATERFRONT DIRECTOR
HEAD SWIM INSTRUCTOR
SAILING
SAILBOARDING
WATERSKIING
CANOEING/TRIPPING
ARCHERY/RIFLERY
WRESTLING

COUNSELLORS
PHYSICAL EDUCATION
AEROBICS
BASEBALL
BASKETBALL
VOLLEYBALL
SOCCER

ARTS AND CRAFTS
MUSIC
SECRETARIES
FOOD SERVICE MANAGER
WAITRESSES/WAITERS
COOK'S ASSISTANTS
MAINTENANCE

SALARY RANGE: \$850 - 2000 plus 6 Week program - Minimum age 18

485-1135 9 AM - 4 PM

Daily news briefs

International students appeal for club status

by Alex Poulis

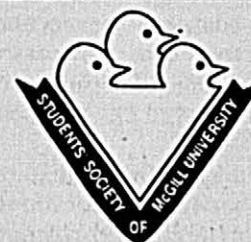
The McGill Association of International Students is appealing to Students' Society for club status.

Association president Souki said, "It's the only way for a group to exist on campus." The benefits include representation and funding by Students' Society and connections with other groups, like the Post Graduate Student's Society and the Multicultural Society.

"Everybody in the Student's Society seems to like what we've done so far," she said.

Students' Society VP Internal Ray Satterthwaite said application will be approved by the executive committee, and that a constitution is being drawn up.

At the students' level, there is no one that looks into international student's issues except PGSS — since 20 per cent of grad students are international students — the international student advisor and advisory committee.



SSMU ELECTIONS

TO BE HELD MARCH 6, 7, 8, 1990

EXTENDED Nominations are hereby called for the following positions:

SENATE:

Arts (Includes Social Work)	2 representatives
Dentistry	1 representative
Engineering (Includes Architecture)	1 representative
Law	1 representative

BOARD OF GOVERNORS:

One Undergraduate Representative

Management	1 representative
Medicine (Includes Nursing and P & OT)	1 representative
Music	1 representative
Religious Studies	1 representative

DEADLINE: WEDNESDAY, FEBRUARY 28, 1990 AT 16H00

NOMINATING PROCEDURES:

- Candidates may run for one position in each of the three categories provided separate nomination papers have been handed in for each position. A typed pen sketch of 100 words or less and a photo of the nominee must be handed in with the nomination.

Nominations must be signed by at least 50 members of the Students' Society who are in the same faculty as the prospective candidate together with their year and faculty, or by 25% of the student enrollment in the faculty together with their year and faculty, whichever is the lesser of the two.

Board Of Governors

Candidates must be members of the McGill Students' Society and must be in good standing. Nominations must be signed by at least 75 members of the McGill Students' Society along with their year and faculty.

Official Nomination forms are available from the Students' Society General Office, Room 105, University Centre

Anne Yu
DCRO

Eric Steinman
CRO

All nominations must be submitted to the Students' Society General Office in the University Centre by 16h00 Wednesday, February 28, 1990 c/o Leslie Copeland, Operations Secretary.

CLASSIFIEDS

Ads may be placed through the Daily business office, room B-17, Union Building, 9h00 - 15h00. Deadline is 14h00

two weekdays prior to date of publication.

McGill students: \$3.50 per day; \$2.50 for 3 consecutive days, \$2.25 for 4 or more consecutive days. McGill Faculty and Staff: \$4.50 per day. All others: \$5.00 per day. There is a 25 word limit. There will be a charge of 25¢ for each word over the limit. Boxed ads are available at \$4.00 per ad per day - no discounts on boxing. EXACT CHANGE ONLY PLEASE.

The Daily assumes no financial responsibility for errors, or damage due to errors. Ad will re-appear free of charge upon request if information is incorrect due to our error. The Daily reserves the right not to print any classified ad.

341 - APTS., ROOMS, HOUSING

Room in newly renovated house. Washer/dryer, kitchen, hydro, Pay-TV. All included. Across from McGill Gym. 200/mo. Call Mike or Joe 284-5122 or Tim 933-6634.

Urgent - Sublet Large 1 1/2, Mar 01 - Aug. 31, clean, across gym. \$350 negotiable, possibly furnished. 284-6353 anytime. Heated, water included.

Leaving next year? Live in spacious 4 bedroom apt. in McGill Area? We'll pay \$100 for your lease. Please call 286-0627 or 939-9643.

Looking for accommodation? Why not a hotel? Cheap, secure, clean, central, maid service. Run by students. Rates start at \$10 a day. 843-5739.

Sick of Commuting? Sublet large 3 1/2 on McGill Campus (Dr. Penfield & McTavish) March 1st, option to renew. Rebecca, 398-9085, 631-3894.

7 1/2 to share: \$185 utilities, large, bright, wood-floored, w/cat, plants, balconies, roof. Jeanne-Mance/Laurier. Quiet, responsible, non-smoking female for March/April 1. 279-6892.

Sublet now till June options to renew. Cozy 2 1/2 with small room. Furnished, heated. On Aylmer. \$395 plus elec. Call Sherissa 679-9009.

1 1/2 \$270 sublet with option to renew. Unfurnished, clean, quiet, bright. Laundry facilities. Hydro extra. 286-0376, 844-8136.

343 MOVERS

Closed van, and Truck. Will transport you and/or your goods safely. Local and Long Distance. Cheap Rates. Reliable. Steve: 340-9470.

Large Econoline Van - for moving local & long distance. Reliable with reasonable rates. Alex, 324-3794.

350 - JOBS

Are you a hardworker and interested in making lots of money? Try treeplanting in B.C. with the reputable Roots Reforestation. Call Alan at 284-6301.

Mail Order - Earn an income without disrupting your studies. Mail order business opportunities paying 50% to 100% commission. Free details. Renaissance Vision, 11888 Suzor-Cole, Montreal, Quebec, H3M 2J2.

352 - HELP WANTED

Swim Director & Assistant swim director, swim instructors, plus sailing, canoeing, kayaking, windsurfing, phys. ed, archery, basketball instructors for Pripstein's (sleepaway) in the Laurentians June 26 - Aug. 16. Call 481-1875.

Drama Co-Directors to organize summer camp musicals, plus Jazz Dance instructor to choreograph dance shows, plus Pottery instructor (kickwheels) & photo counsellor, for Pripstein's camp call 481-1875.

Metropolitan News. Newspapers, magazines, maps, periodicals arrive everyday from all over the world. That contains jobs, business, etc. 1109 Cypress, 866-9227. One block south of St. Catherine St. between Peel & Stanley. Students register your name for temporary or permanent employment in person anytime.

Five dollars for 20 minutes of your time - heterosexual men aged 18-27 wanted for psychology experiment. For more information, call Daniel 284-6197; leave message.

Étudiants(es) Demandés(es) Travail 3 hrs par jour: 9:00h à midi. Entrainement et Transport Fournis. Ventes des abonnements pour "Le Journal de Montréal" \$75 - \$100 par semaine Tel: 334-2001.

Photographer needs people to work as models. Modelling experience not necessary. Must be attractive and in good shape. Call for interview: 939-3791.

354 - TYPING SERVICES

Success to all students in 1990. Theses, Term papers, Resumes, Translations, Editing, 20 years of experience. 7 days a week. \$1.50 double spaced. IBM On McGill campus, Peel St. CALL Paulette Vigneault 288-9638.

Term papers, resumes, fast and efficient. 7 days a week Translation, Editing. \$1.50/double spaced. On Campus. Call Roxanne. 288-0016.

One-Day-Service. Bachelor Commerce background. Editing if required. Skilled with words. Excellent presentation. Improved mark guaranteed. Electronic Memorywriter. Academic papers, C.V.'s, Theses. 340-9470.

RESUMES by M.B.A.'s Quality. Service. Satisfaction. Student discount and wordprocessing. See yellow pages ad. Prestige (on Guy) 939-2200.

RESULT RESUMES: a 17 year proven job-finder. Quality IBM processing-print, in depth consulting, free sample. Student papers/applications orientating: Tutoring, editing, consulting, typing. 488-5694.

Girl Friday Word Processing. Resumes, term papers, correspondence, mailing lists (laser printer). 9:00-5:30 (7 days) 937-8495.

Word Processing with 5.0 WordPerfect, laser quality printing. 20 years' experience in typing term papers, theses (Pick-Up and Delivery on Campus). Eileen 485-1056.

LASER-TYPE. Theses, papers, resumes, etc. Translation, editing, laser printing. Student Discount. Prestige (on Guy - Yellow Pages under C.V. or Resume) 939-2200.

I will gladly and efficiently type all academic papers. IBM process. & print. Twenty years experience. Fluently bilingual. Fast & Accurate. Competitive prices. 284-9330.

Word Processing - reasonable & reliable. NDG, near Vendome metro. Call Eileen (until 9:30 p.m.) 483-3600.

Word Processing - term papers, theses, grants, letters. Excellent quality, reliable group. Free pick up and delivery. Reasonable. Call 487-1338.

Word Processing: Term papers, theses, resumes, etc. \$1.60 per page dbl. spaced. Call Rosanne: 683-0881.

Funds are fundamental

Of course they're not

always attainable, but

Realize that it is not possible

To make a lot of money

Unless you put your mind to it.

Now is the time to act.

Everyone's doing it...

Fortune Graphics fun on the

phones:

Telemarketing has never been

better!

Call Gina at 289-8526

Professional Word Processing, Desktop Publishing, Theses, Expert resumes, term papers, form filling, laser printing, pick-up service available, rush jobs, minutes from campus call anytime 861-6767.

Efficient and accurate wordprocessing for term papers, theses and other documents. Pick up on Campus or Longueuil Metro. 1.50\$ double spaced. Call 679-2255.

Word Processing, term papers, theses, translations, mailing lists. Excellent work (IBM, laser printer). Reasonable rates. Call Annette. Day: 843-4875 Evenings, week-ends 279-8100.

Typing, term paper, theses, resumes. Professional Presentation - bilingual. Special rates for manuscripts. 24hr. service - 10 minutes from Campus. 769-3466 after 6 p.m., anytime on weekends.

Traitement de texte: C.V., memoires, theses, travaux universitaires. Bilingue, rapide et précis. 272-0143.

358 SERVICES OFFERED

In Depth Analysis and correction of term papers + theses by English Ph. D. (University of London, Eng.) Flawless translation \$16/hour call 288-9638.

Free haircuts - by apprenticing stylists. Call 935-5175.

361 ARTICLES FOR SALE

One (1) IBM personal computer PS-2 model# October 1987 with Roland Printer Model #PA 9101 for \$4 000.00 (Four thousand dollars) or best offer. 482-8272 (Snowdon Area)

QueenSize Waterbed. Fully Equipped with night tables. Heater, Pump and cover. Gork Condition. Only \$125 call Francis 484-7426.

For Sale - Wall Unit - Solid Wood, Brown, Price \$150. Upholstered study Rocker, excellent condition: \$150. Student Desk with Table-Top World Map: \$50. Call 765-9804.

Manual - "How to achieve Total Success" 442-page book explains how you can easily master your mind to achieve everything you desire. Only \$15.95 Renaissance Vision 11888 Suzor-Cole, Montreal, Que., H3M 2J2.

372 LOST AND FOUND

STOLEN: brown ladies wallet from McLennan Library. I don't care about the wallet but PLEASE give me back my I.D.'s and pictures! Call 287-7614.

374 - PERSONALS

Frosty says...

"Don't die on vacation."

WOMEN: Would you like to get to know your Neighbors? New friends to have over? Meet them thru the WALK-SAFE NETWORK. McL. Lobby Mon - Thurs 10:45 p.m.

Mid-Terms from Hell + slush on your boots + nonexistent spring break funds + Star Trek reruns - a less than pleasant Valentines Day. Nightline 398-6246, 6pm - 3am. nighty. (We live for this stuff)

SPIKE LEE

"She's Gotta Have It" he's gotta have it. Have what? A chance to snap out of that "School Daze" How? Come and ask SPIKE LEE yourself! ASUS is hosting this mega-event. Mon., March 5 at 8 pm in Leacock 132. Tickets go on sale Wed., Feb. 14 at Sadies (398-6795). Better "Do The Right Thing" and get yours quick!!! \$10 with Student I.D. \$15 others.

AMIGA. Amiga club forming at McGill! Interested? Want info? Leave message for Robert at 731-4369 (before 22:30). Or if you want, send Email to 8608094@Emfi. Lan. McGill Ca

Bring your camera and try your hand at nude glamour photography. For information call 845-1018 after 6 p.m.

Look! A royal publication to Edward IV. Congratulations on your successful passage into manhood. Remember: Use it before you lose it, but don't abuse it! The Babes, Queen Elizabeth III and the Sea Goddess.

To the chicken-neck man of my dreams: I'm as dull as toast. Dinner sounds wonderful. - Your mustached mama.

Aussie - if you love someone let him go. If he returns he is yours. If he does not he's a bum on the beach in Australia. We'll miss you!

383 LESSONS OFFERED

Offering Russian Lessons as well as Russian-English Translation Services. Lessons given by Native Speakers. \$12/hour ask for Lena 486-6108.

385 NOTICES

Gays and Lesbians of McGill offers an information and counselling talkline. Call us with questions, problems, or just to talk. Phone 398-6822 or drop by Union 417, M-F, 7 - 10 p.m.

Lesbian/Gay studies group meets Thursdays, discussion group meets Fridays, both at Yellow Door (3625 Aylmer) 17h00. Info 597-0363 (Bill).

Animals Rights Day Wednesday, February 28, 10 - 4:30, Main floor, Student Union. Info, books, T-Shirts and a raffle of cruelty-free beauty products. Groups from across Montreal will be represented. META 276-0914.

Scarlet Key Award: Reminder - nominations for 1990 close Friday, February 23, 1990.

Application kits are available at the Students' Society General Office. Information: 398-3556.

The McGill Journal of Russian and Slavic Studies is looking for submissions. The deadline is March 1st. Drop off submissions in Brimman Rm. 663.

End your college career with a bang!... or at least a flop on the floor - Come to the Red & White Ball Friday, March 23. Tickets at Sadies \$38/person.

St. Martha's meets every Sunday 10:30 am, 3521 University. Coming Up: Jefferrilli's "Jesus of Nazareth in 4 segments, starting March 4th. Pot luck brunch. Info: 398-4104, Roberta Clare.

St. Valentine's Engineering PubNite, Friday February 16, Union Ballroom. Get a dollar off admission if you wear a full red shirt or sweater, pay an extra if you wear red pants. There will be cheap beer, free munchies, old films, cartoons and the list goes on. A great party!

387 VOLUNTEERS

389 MUSICIANS WANTED

Wanted Energetic Musicians. Cello, Violin, Flute, Recorder, Sax & Voice only. Willing and/or able to work on composition of original manuscript to complement performance art piece. For info: 849-7227, 6 - 9 p.m., Tuesday - Thursday. Deadline: Feb. 22, 1990. Auditions begin Feb. 24, 1990.

Jimmy James
Fri - Sat
Feb. 16 - 17
Bar G Sharp
4062A St. Laurent



ComputerEASE

CONSULTANTS IN MICROCOMPUTER
SOFTWARE, HARDWARE AND TRAINING
2196 Rene Levesque Ouest Suite 1 • 937-4570

VGA COLOR SPECIAL

Top of the Line Color at a Price
You Can Afford!!!

12 Mhz AT With High Speed 40MB Hard Disk and VGA Color

1899.00



Package Includes:

- Narrow case
- 200 Watt Power Supply
- 12 MHZ Motherboard
- 80286 CPU
- 1 MB RAM
- Serial, Parallel Ports; 8 Expansion Slots
- 1.2 MB Floppy Disk Drive
- Western Digital 40 MB Hard Disk 28 MS with 1:1 Controller
- 1024 X 768 16 bit 256K VGA Video Card
- Samtron 14" VGA Monitor
- 101 Key Keyboard

Edwina Reich
Consultant
937-4570

Prices effective until February 28, 1990

1 Year full parts and labour Warranty

FREE INTRODUCTORY DOS LESSON INCLUDED!!!
WE ALSO CARRY A FULL LINE OF XT'S 386'S AND PERIPHERALS



5173 COTE DES NEIGES
Tel: 735-7850

INVITATION

A FIRST IN MONTREAL

THE INTEL 486 HAS ARRIVED

This new processor represents the peak of performance in the world of PC.

The i486 offers you immense possibilities in terms of:
Built-in Math Co-processor and 8 kb of int. cache
Software compatibility with the 80x86 group
including the new AUTOCAD 386.

Teachers, researchers, professionnels, students, you are all welcome to attend a demonstration.

BEST ENTRY IN THE 286 WORLD UPGRADABILITY TO THE 386/486 WORLD

ALR PowerPlus 80286, 12.5 Mhz
1MB RAM (Exp. to 5 MB on motherboard)
40MB 28ms Hard disk, 1.44MB Floppy drive
6 Slots, 8er-Par Ports, 101 key Keyboard
386/i486 Feature Connector



\$ 1635

US \$100.00 REBATE
UNTIL 02-28-1990

ALR 386/25 MHZ, 1MB Ram, 64 Kb cache, Par-8er
HD 40 Meg, 28 ms, 1.2MB Floppy drive



\$ 3200

ALR 386/25 MHZ, 1MB Ram, 64 Kb cache, Par-8er
ATI-VGA WONDER 256KB

\$ 895

ATI-VGA WONDER 256KB(1024x768) + MOUSE
NEC MONITOR 2A (800x600)/3D (1024x768)

\$ 395

\$ 745/945

COPROC. 8087-2(8 MHZ) XT/80287-1(10 MHZ) AT
COPROC. 80387X(16 MHZ)/80387-20(20 MHZ)

\$ 176/295

\$ 425/570

HARD DISK 40 MB 45 ms (XT) + CTRL

\$ 415

HARD DISK 40 MB 28 ms (AT/386)

\$ 455

HARD DISK 85 MB 28 ms + CTRL (XT/AT/386)

\$ 750

2400 BAUD MODEMS EXTERNAL/INTERNAL

\$ 180/160

LOGITECH MOUSE 8-9 (350 DPI)

\$ 99

QTRONICS MOUSE Serial

\$ 65

EPSON LX-810 Printer + Cable

\$ 275

RAVEN PR-2417 Printer + Cable

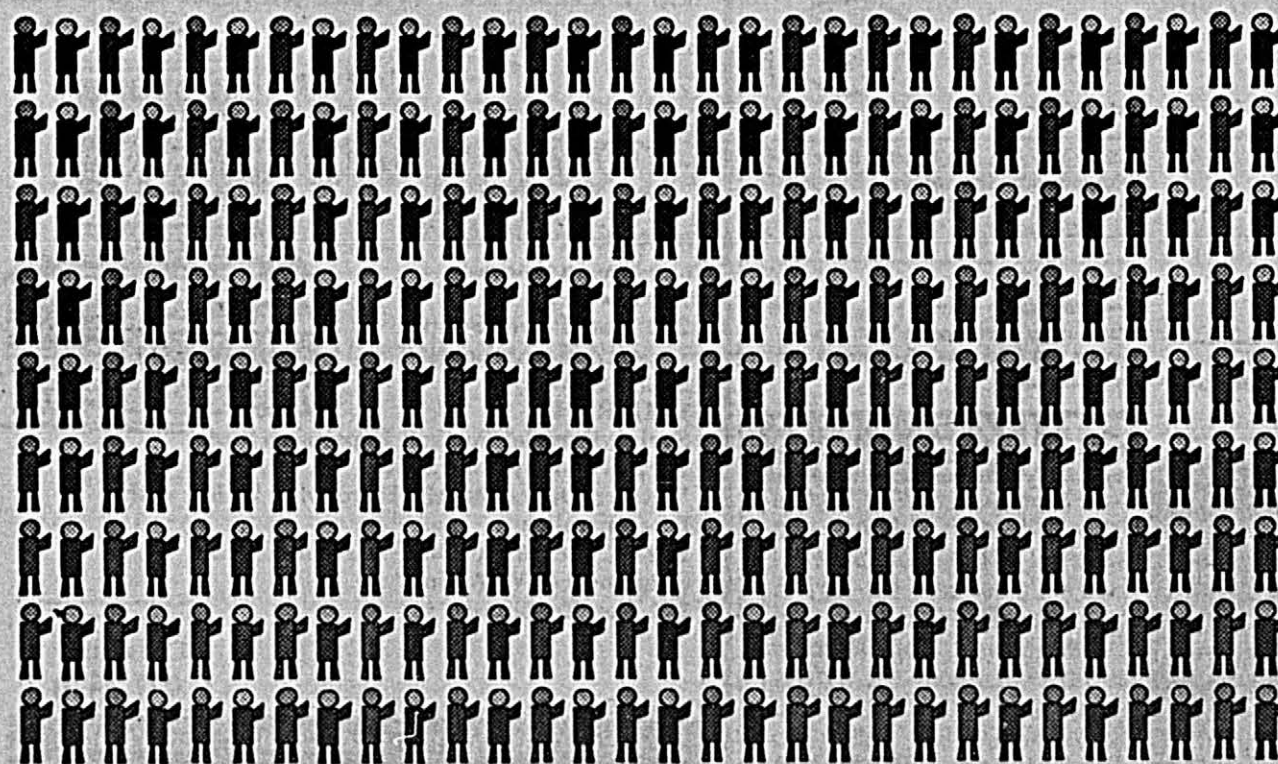
\$ 439

FINANCING AVAILABLE FOR STUDENTS

BUSINESS HOURS
MON-WED 9-18H
THU-FRI 9-21H
SAT 9-17H



Notification of Students' Society GENERAL ASSEMBLY



Monday,
March 5, 1990
Union
Ballroom
1 p.m. - 3 p.m.